--To introduce N181-Q mutation, oligos MSPGLYCO-1 (CTCCTTGTTCAGG AACTTGTAGGG; SEQ ID NO:18) and MSPGLCO-2 (GTCCTGCAGTACACATATGAG (SEQ ID NO:19), Fig. 4) were used to amplify plasmid GTC 627. The PCR product was cloned into pCR2.1. This generated plasmid GTC700.—

In the claims:

Please cancel claims 1-5, 9, 11, 17-19, 21, 23-30, and 38-47 without prejudice.

Please amend claims 6- 8, 10, 20, and 31-37 as follows:

6. (Amended) A method for producing a parasite protein of fragment thereof in the milk of a non-human transgenic mammal, comprising:

providing a non-human transgenic mammal whose genome comprises a modified nucleic acid encoding a parasite protein or fragment thereof operably linked to a promoter which directs expression in the mammary gland, wherein the nucleic acid has been modified by replacing one or more AT-containing codons of the nucleic acid as it naturally occurs in the parasite with a preferred mammary gland-specific codon encoding the same amino acid as the replaced codon; and allowing the transgenic mammal to express the parasite protein or fragment thereof in its milk, to thereby produce a parasite protein or fragment thereof.

7. (Amended) A method for producing a parasite protein or fragment thereof in the milk of a non-human transgenic mammal, comprising:

providing a non-human transgenic mammal whose genome comprises a modified nucleic acid encoding a parasite protein or fragment thereof operably linked to a promoter which directs expression in the mammary gland, wherein the nucleic acid has been modified by replacing at least a portion of an AUUUA mRNA instability motif in the coding sequence as it naturally occurs in the parasite with a preferred mammary gland-specific codon encoding the same amino acid as the replaced portion of the AUUUA mRNA instability motif; and

allowing the transgenic mammal to express the parasite protein or fragment thereof in its milk, to thereby produce a parasite protein or fragment thereof.

D10

8. (Amended) The method of claim 6 or claim 7, wherein more than one codon in the naturally occurring nucleic acid has been replaced with a preferred mammary gland-specific codon encoding the same amino acid as the replaced codon.

10. (Amended) A method for producing a parasite protein or fragment thereof in the milk of a non-human transgenic mammal, comprising:

providing a non-human transgenic mammal whose genome comprises a modified nucleic acid encoding a parasite protein or fragment thereof operably linked to a promoter which directs expression in the mammary gland, wherein the nucleic acid has been modified by

D11

a) replacing at least a portion of an AUUUA mRNA instability motif in the coding sequence as it naturally occurs in the parasite with a preferred mammary gland-specific codon encoding the same amino acid as the replaced portion of the AUUUA mRNA instability motif; and

b) replacing one or more AT-containing codons of the nucleic acid as it naturally occurs in the parasite with a preferred mammary gland-specific codon encoding the same amino acid as the replaced codon; and

allowing the transgenic mammal to express the parasite protein or fragment thereof in its milk, to thereby produce a parasite protein or fragment thereof.

D12

20. (Amended) A transgenic non-human mammal whose germline comprises a modified nucleic acid encoding a parasite protein or fragment thereof operably linked to a promoter which directs expression in the mammary gland, wherein the nucleic acid has been modified by replacing at least a portion of an AUUUA mRNA instability motif in the coding sequence as it naturally occurs in the parasite with a preferred mammary gland-specific codon encoding the same amino acid as the replaced portion of the AUUUA mRNA instability motif and replacing one or more AT-containing codons of the nucleic acid as it naturally occurs in the parasite with a preferred mammary gland-specific codon encoding the same amino acid as the replaced codon, wherein the transgenic mammal expresses the parasite protein or fragment thereof in its milk.

31. (Amended) The method of claim 10, wherein the nucleic acid has the same codon of the naturally occurring nucleic acid replaced with a preferred mammary gland-specific codon such that both the AT content of the naturally occurring nucleic acid is lowered and the mRNA instability motif of the naturally occurring nucleic acid is eliminated by the preferred mammary gland-specific codon.

32. (Amended) The method of claim 10, wherein all of the AUUUA mRNA instability motifs present in the naturally occurring nucleic acid have been replaced by a preferred mammary gland-specific codon.

33. (Amended) The method of claim 10, wherein the modified nucleic acid further comprises at least one additional codon other than the codon replaced to lower AT content or the codon replaced to eliminate an mRNA instability motif which has been replaced with a preferred mammary gland-specific codon.

D12

34. (Amended) The method of claim 10, wherein all of the codons of the naturally occurring nucleic acid have been replaced with a preferred mammary gland-specific codon.

35. (Amended) The method of claim 10, wherein the modified nucleic acid is expressed in milk at a level which is at least 25% more than the naturally occurring nucleic acid is expressed under the same conditions.

36. (Amended) The method of claim 10, wherein the modified nucleic acid is expressed in milk at a level which is at least 50% more than the naturally occurring nucleic acid is expressed under the same conditions.

37. (Amended) The method of claim 10, wherein the modified nucleic acid is expressed in milk at a level which is at least 100% more than the naturally occurring nucleic acid is expressed under the same conditions.

Please add claim 48 as follows:

013

48. (New) The method of claim 10, wherein all non-preferred mammary gland specific codons are replaced with preferred mammary gland specific codons.